A 1990–91 survey of the Brush-tailed Rock-wallaby *Petrogale penicillata* in the Warrumbungle National Park Coonabarabran, New South Wales

Darren Shelly

Department of Conservation and Land Management, Wellington
Research Service Centre, P.O. Box 228, Wellington, NSW 2820

ABSTRACT

Four localities within the Warrumbungle National Park were investigated for the presence of the Brush-tailed Rock-wallaby. Direct observation and faecal pellet identification were used to indicate the animal's presence. Results showed that only Chalkers Mountain had the macropods present, however, the population may be at a dangerously low level. Recommendations for management of this animal within the Park include feral fox and goat control programme combined with exclusion fencing around optimal habitat. A review of known Brush-tailed Rock-wallaby distribution in New South Wales is also recommended as the survey showed a continuing decline of the animal's distribution west of the Great Dividing Range.

INTRODUCTION

The Warrumbungle National Park near Coonabarabran NSW has several species of macropod present in varying degrees of abundance. The Brush-tailed Rock-wallaby *Petrogale penicillata* is one of the least abundant. The apparent decline in this species' distribution and abundance prompted a general status review in 1987 (Short and Milkovits 1990), which included the Warrumbungle National Park. Since then, however, sightings of rock-wallabies have been rare and this study aims to update this species' distribution and abundance within the park.

The National Parks and Wildlife Service at Coonabarabran identified four localities at which positive sightings of the Brush-tailed Rock-wallaby had been obtained over the years (see Figure 1). These were:

1. Belougery/Split Rock — sightings had been made in the distant past;
2. Mount Exmouth — last sightings around 10 years ago;
3. Mount Naman — possible sighting in 1991;
4. Chalkers Mountain — last sighting in 1991.

All four areas were investigated for the presence of rock-wallabies to determine if there has been a recent decline in distribution and/or abundance and if a specialized management programme needs to be formulated to maintain the species within the park.

METHODS

The presence of the Brush-tailed Rock-wallaby at each location was determined by either direct observation or through the presence of faecal pellets and other sign. Faecal pellets of the Brush-tail Rock-wallaby are distinguishable from those of other macropod species which inhabit the Park by their size and shape. Rock-wallaby pellets are the smallest (1–2 cm length, 1 cm width) and have a distinct tapering at one end. Their relative age can be inferred from their colour. Fresh pellets are usually black and soft. Pellets can retain the black colour for several weeks or months. Middle-aged pellets (months to a year) are brown, while old pellets are grey to white and can remain intact in sheltered environments for several years. In this study only the presence of black coloured pellets were taken as indicative of the recent presence of Brush-tailed Rock-wallabies.

Each locality investigated was searched for pellets along animal tracks, caves, rock ledges and nearby water sources — areas where rock-wallabies would most likely frequent. Scanning of cliffsides and slopes through binoculars was also undertaken at intervals in attempts to observe the animals. The presence or absence of feral animals, or their sign, was recorded as previous research has suggested that the decline of rock-wallaby populations may be linked to the presence of feral goats and predation by foxes.

Chalkers Mountain was investigated more intensively than the other sites. Eighteen plots, each 2 m.sq., were marked and cleared of pellets, then re-checked for deposited pellets and other signs. Feed stations were also established at nine selected plots on Chalkers Mountain after fresh pellets were found. The aim was to obtain some estimate of the number of animals present. These stations were replenished weekly for two weeks. The feed left out was a mixture of prepared macropod food (as fed to animals at a Cessnock animal park) and commercially prepared Guinea Pig pellets.

RESULTS

1. *Belougery/Split Rock:* On the 23 December 1990, the area was circumnavigated and all accessible rock ledges, platforms and caves were checked for faecal pellets. Pathways and areas around the base of the rock were also searched. No faecal pellets were identified as being deposited by rock-wallabies. No sightings of any animals were made. Feral goat faecal pellets were found on several rock ledges and platforms. Their brown colour suggested that they were of some age — months, possibly years in some cases. A small herd of eight feral goats was observed within 150 m of the base of Split Rock suggesting that they frequent this locality. Since no direct observations of rock-wallabies were made, and no indirect evidence of their presence found, it was decided that no further investigation would be carried out at this area.

2. *Mount Exmouth:* Due to the large size of this locality, investigations were made over two separate days. Initial searches were conducted on the lower slopes, scree slopes and the flatter areas surrounding the steepest portion of Mount Exmouth on 23 December, 1990. No direct observations of rock-wallabies were made nor were signs of indirect evidence

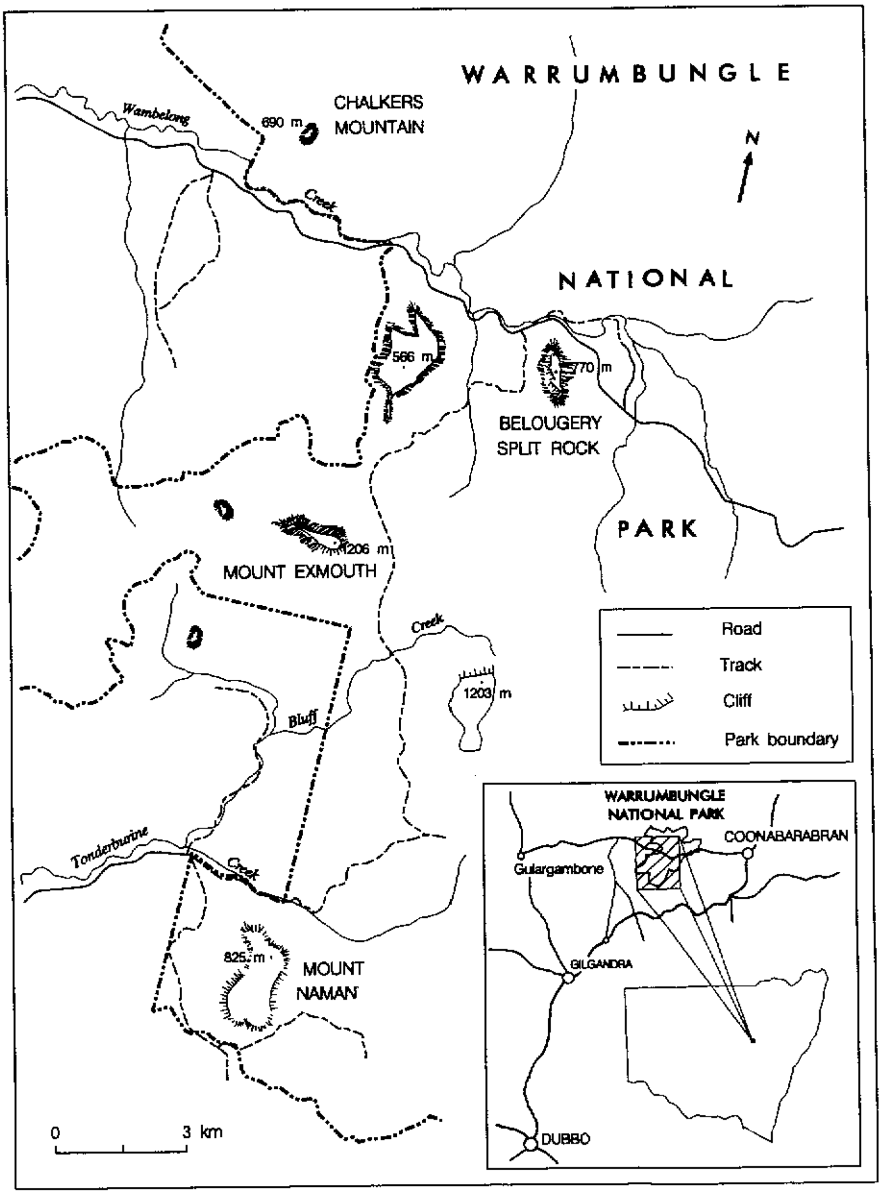


Fig. 1. Location of sites searched for the presence of the Brush-tailed Rock-wallaby in the Warrumbungle National Park.

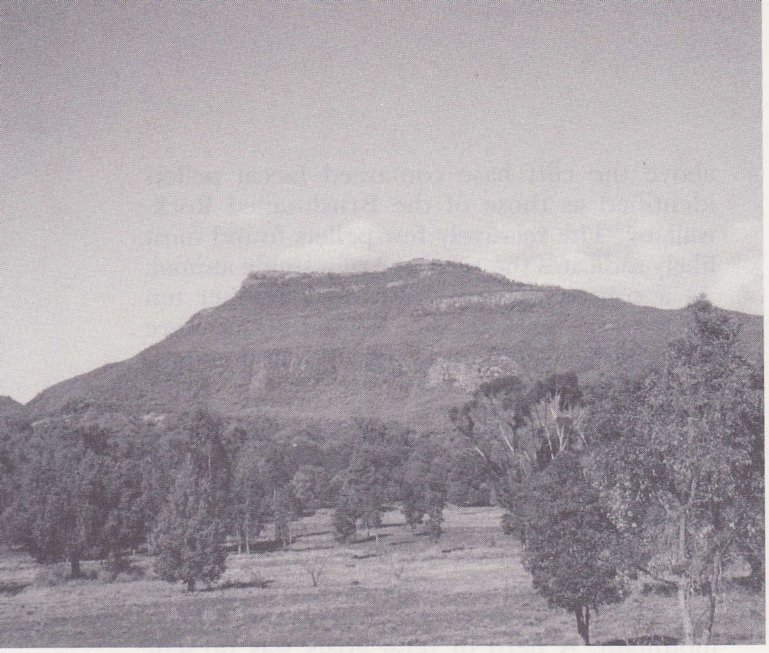


Fig. 2. Chalkers Mountain. Photograph by Darren Shelly.

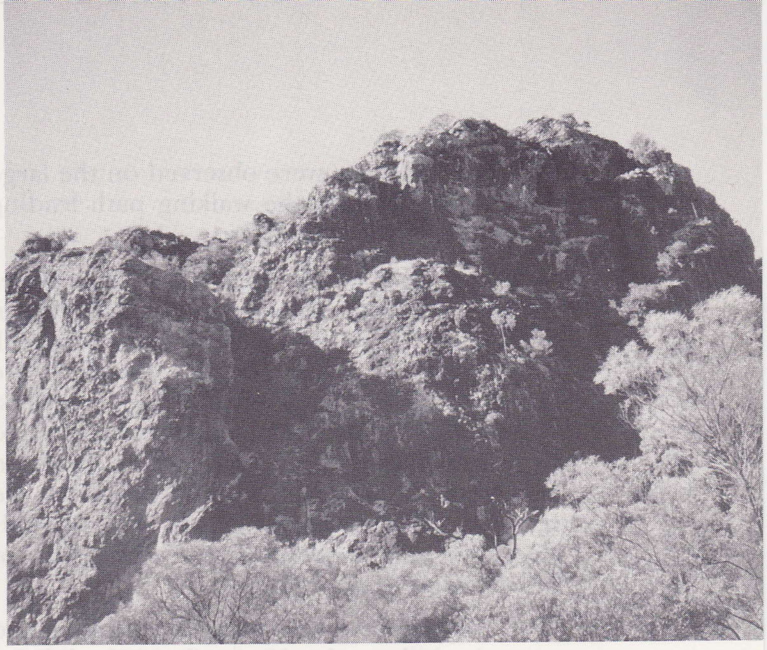


Fig. 3. Top half of Chalkers Mountain — Rock-wallabies were observed here in 1988. Photograph by Darren Shelly.

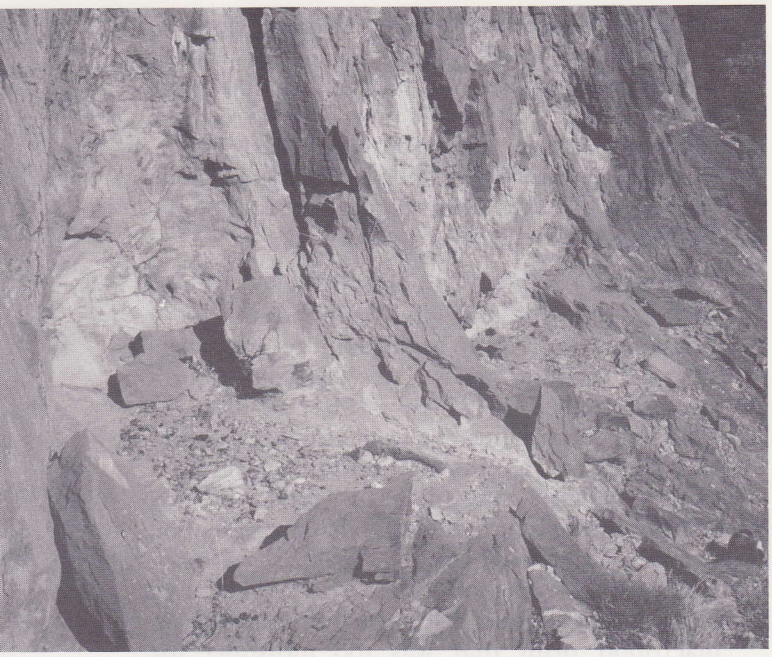


Fig. 4. Typical rock ledges searched for pellets on Chalkers Mountain. Photograph by Darren Shelly.

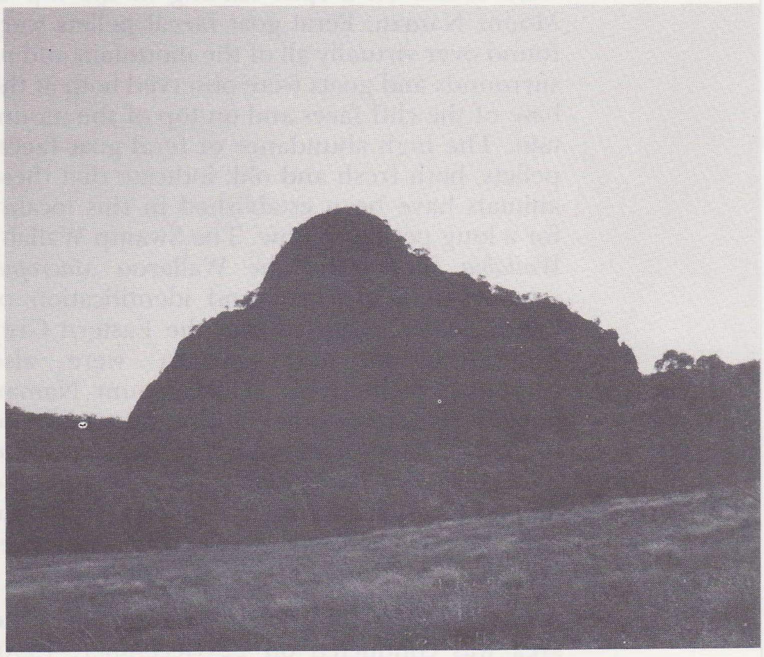


Fig. 5. Mount Exmouth. Photograph by Darren Shelly.

Fig. 6. Belougery/Split Rock. Photograph by Darren Shelly.

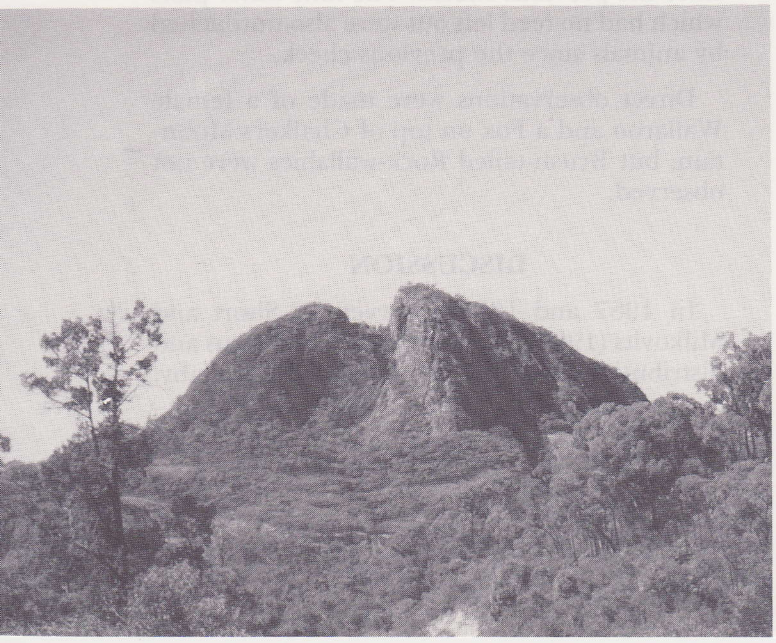
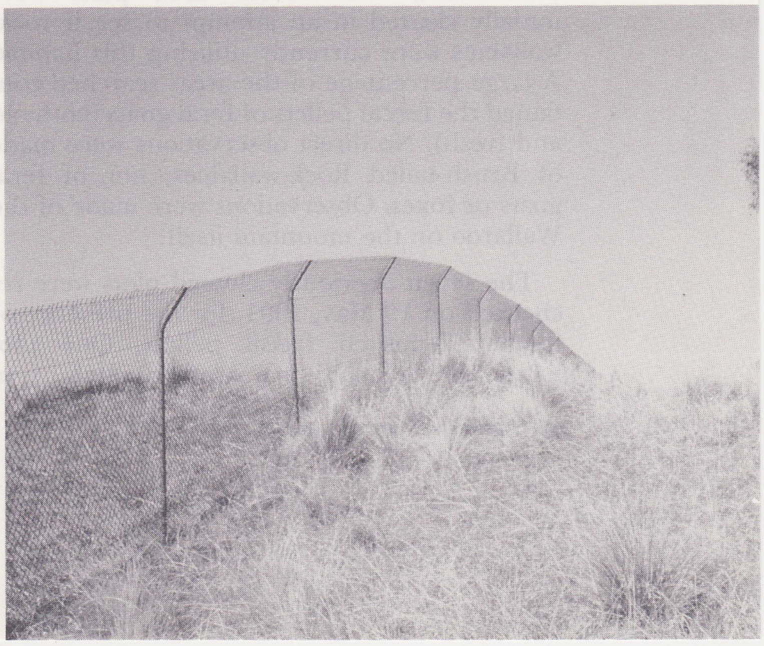


Fig. 7. The Brush-tailed Rock-wallaby enclosure at Tidbinbilla Nature Reserve. Such an enclosure for captive breeding is recommended for the Warrumbungle National Park. Photograph by Brian Jenkins.



found. Feral goats were observed on the large scree slopes and on the walking path leading to the top of the mountain.

A more detailed investigation of the steeper portion of Mount Exmouth was conducted on the 9 March 1991. All accessible caves and rock ledges were searched for faecal pellets. No pellets could be identified as being deposited by rock-wallabies. Virtually all areas contained large numbers of feral goat pellets, both old and fresh. Feral goats were observed on two occasions on the steeper slopes near the cliff faces. No direct observations were made of Brush-tailed Rock-wallabies.

3. *Mount Naman:* A search of the mountain and a nearby hill on the 13 April, 1991, did not reveal any observations of the Brush-tailed Rock-wallaby nor any faecal pellets. Fox scats were found on a spur leading to the top of Mount Naman. Feral goat faecal pellets were found over virtually all of the mountain and its surrounds and goats were observed both at the base of the cliff faces and on top of the mountain. The high abundance of feral goat faecal pellets, both fresh and old, indicate that these animals have been established in this locality for a long period of time. The Swamp Wallaby *Wallabia bicolor* and the Wallaroo *Macropus robustus* were observed and identification of faecal pellets indicated that the Eastern Grey Kangaroo *Macropus giganteus* were also common to the area. While Mount Naman initially seemed to have similar topography to the other sites investigated, it was found to have very few caves and rock ledges on the steeper faces. Such areas are known to provide the shelter component of a rock-wallabies habitat.

4. *Chalkers Mountain:* Initial investigation of the area was conducted on 22 December, 1990. The mountain was circumnavigated and all accessible rock ledges and caves were checked for pellets. Faecal pellets identifiable to rock-wallabies were found on two rock ledges, however their coloration suggested that they were considerably old. Seven small plots were initially cleared in an attempt to see if rock-wallabies were currently utilizing this habitat. A large percentage of the areas searched contained the faecal pellets of feral goats (both old and fresh). No direct observations were made of Brush-tailed Rock-wallabies, nor of feral goats or foxes. Observations were made of the Wallaroo on the mountain itself.

The seven previously cleared plots were rechecked on 19 May, 1991, for the presence of freshly deposited faecal pellets. One plot located in a small cave approximately 4 m above the cliff base contained faecal pellets identified as those of the Brush-tailed Rock-wallaby. The relatively few pellets found most likely indicates the presence of a single animal. As a consequence of this find a further ten plots were marked and cleared. Data were taken at each site on the presence and abundance of faecal pellets.

Field observations were also conducted during the establishment of the faecal pellet plots on the 19th May. No observations of the Brush-tailed Rock-wallaby were made. Several Common Wallaroos were seen on Chalkers Mountain as well as in the surrounding area. Foxes were observed at the base and on the mountain. A herd of feral goats was present on a hill approximately 300 m distant and a second herd was seen across the valley at a distance of approximately 600 m.

On 20 July, 1991, the cleared plots were rechecked for faecal pellets. No rock-wallaby pellets were found on any plots since the previous check on the 19 May. Pellets from the following species were found: goat (4 plots), wallaroo (3 plots) and grey kangaroo (4 plots) and signs of foxes were also detected (2 plots). Eight plots were free of pellets.

An additional plot was established on a large rock ledge at the cliff-base near the middle of Chalkers Mountain in an attempt to have plots situated around most of the mountain's circumference. On 27 July 1991, all plots on Chalkers Mountain were re-checked for pellets and sign that may have been left at the feed stations. Of the nine plots on which feed was left out animals prints were left on three. The prints of a hooved animal, probably a small feral goat, were found near the feed at two plots but the food itself was untouched. A macropod print that was too indistinct for species identification was found on one feed station. Two further plots had faecal pellets attributed to the Eastern Grey Kangaroo where the animals had fed on the grain left out, while the remaining feed stations were untouched since the previous checks. The nine other plots which had no feed left out were also untouched by animals since the previous check.

Direct observations were made of a female Wallaroo and a Fox on top of Chalkers Mountain, but Brush-tailed Rock-wallabies were not observed.

DISCUSSION

In 1987 and 1988 a survey by Short and Milkovits (1990) assessed the current status and distribution of the Brush-tailed Rock-wallaby.

The study re-surveyed sites within New South Wales and Victoria where the animal was present prior to 1920 and found that there has been a definite decline in distribution with the extinction of most colonies west of the Great Dividing Range. The results indicated that the only remaining colony known west of the Great Dividing Range in 1988 was that found on Chalkers Mountain in the Warrumbungle National Park. These data were mostly based on a sighting by a park ranger at the time of the Short and Milkovits (1990) status review. Previous to this a more detailed survey of Chalkers Mountain was conducted in 1981 by several National Parks and Wildlife personnel. Faecal pellet plot surveys at that time showed a mean rock-wallaby faecal pellet density of 48 per 50m or 9622 pellets/ha. One or two wallabies were also observed while the survey was being conducted. Estimation of faecal pellet decay and deposit rates gave a population estimate of a maximum of 13 individuals.

My 1990–91 investigation of the four localities within the park where the rock-wallaby had been noted showed that the animals can now be regarded as absent at three localities (Mt Exmouth, Mt Naman and Belougery/Split Rock). The fourth location at Chalkers Mountain revealed the presence of aged and fresh faecal pellets identifiable to the Brush-tailed Rock-wallaby. However, the density of pellets was so low that the number of Brush-tailed Rock-wallaby currently inhabiting Chalkers Mountain may be as low as a single individal.

The results of the present survey indicate that the contraction of rock-wallaby distribution from west of the Great Dividing Range (Short and Milkovits 1990) is continuing. Several reasons can be put forward, including predation, competition and disturbance. Within the Warrumbungle National Park, the major predators for the rock-wallaby are likely to be Wedgetail Eagles, dingoes and foxes. Only the fox is present in large numbers. It is an efficient predator of rock-wallabies as it is an excellent climber capable of reaching the caves the rock-wallaby retreats to for protection against predators (Rolls 1969). Research conducted by Kinnear *et al.* (1988) in Western Australia on the Black-flanked Rock-Wallaby (*P. lateralis*) showed that at sites where foxes were controlled by bait the wallaby population increased substantially, while unbaited sites showed declines in population size. The impact of foxes may become critical when populations are reduced to low levels (<10 individuals) (Short and Milkovits 1990), and the Brush-tailed Rock-Wallaby population at Chalkers Mountain falls into this category.

Competition for feed by sheep and for feed and shelter sites by feral goats are other possible reasons for declining rock-wallaby populations west of the Great Dividing Range (Short and Milkovits 1990). Feral goats tend to favour the rocky outcrops which are also the main habitat-type of rock-wallabies. While there are no quantative data available on feral goat/rock-wallaby interaction, a herd of feral goats moving into an area inhabited by rock-wallabies is highly likely to cause the less aggressive wallaby to find new shelter sites. Displaced animals may then become a much easier target for predation if they have less access to their optimal habitat of steep slopes, caves and ledges to help elude predators.

RECOMMENDATIONS FOR MANAGEMENT FROM THIS CURRENT INVESTIGATION OF THE BRUSH-TAILED ROCK-WALLABY WITHIN THE WARRUMBUNGLE NATIONAL PARK

1. That there is an urgent need for a current status review of Brush-tailed Rock-wallaby distribution and abundance both within and outside all National Parks.
2. Further research on the role of these feral species in the decline of the Brush-tailed Rock-wallaby would be advantageous if feral goat and fox control programmes are to be implemented in National Parks, whether rock-wallaby populations are threatened or not.
3. That some form of re-introduction programme be initiated within the Warrumbungle National Park to help preserve the western-most Brush-tailed Rock-wallaby colony in New South Wales. Predator-proof fencing around a known habitat, such as Chalkers Mountain, followed by extensive baiting both inside and outside the wire would provide optimal chances of a successful re-introduction.

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Update from Greg Croft, District Manager, NSW. National Parks and Wildlife Service, Coonabarabran: There have been recent sightings (June 1993) of fresh Brush-tailed Rock-wallaby faecal pellets at Chalkers Mountain, although the animals themselves have not yet been observed (pers. comm. to Cathy Rummery NPWS Head Office).